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| 10/749,959 | 12/31/2003 | Ahmed H. Mohamed | 14917.0226US01/MS305420.0 | 8581 |
| 27488 7590 01/25/2008 MERCHANT & GOULD (MICROSOFT) P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903 | | | EXAMINER KOROBV, VITALI A | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/749,959

Applicant(s)

MOHAMED ET AL.

Examiner

Vitali Korobov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01/08/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

1. This is a first Office Action on the merits of this application. Claims 1-24 are presented for examination. Claim 24 was withdrawn from consideration pursuant to an Election/Restriction requirement. Accordingly, claims 1-23 are currently pending and have been examined in this Office Action.

Paper Submitted

2. It is hereby acknowledged that the following papers have been received and placed of record in the file: **Information Disclosure Statement** as received on 01/08/2004 was considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 5-16, 18 and 20-23 are rejected under 35 U.S.C. 102(e) as being anticipated by the U. S. Patent Application Publication No. 2004/0010612 by Pandya, hereinafter Pandia.

Regarding claim 1, Pandya teaches a system for offloading an

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input/output (I/O) task from a first computer to a second computer, comprising: a client running on the first computer ([0091] and Fig. 7 - client on the left); a server running on the second computer ([0091] and Fig. 7 - server on the right); and at least one RDMA channel linking the first computer and the second computer ([0068] and Fig. 35 - client/server RDMA transfer), wherein the first computer and the second computer communicate in accordance with a protocol comprising a network discovery phase ([0100] - discovery) and an I/O processing phase ([0072] - I/O processing).

Regarding claim 2, Pandya teaches the system of claim 1 wherein, in the I/O processing phase, read operations are implemented using RDMA ([0140]) and write operations are implemented using send operations ([0165]).

Regarding claim 3, Pandya teaches the system of claim 1 wherein the protocol is used in association with a second network protocol ([0008]).

Regarding claim 5, Pandya teaches the system of claim 3 wherein the second protocol is CIFS ([0008]).

Claim 6 is rejected in view of the above rejection of claim 1. Claim 6 is essentially the same as claim 4, except that it sets forth the invention as a computer program product rather than a system, as does claim 1.

Regarding claim 7, Pandya teaches a method for offloading an input/output (I/O) task from a first computer to a second computer, comprising: discovering, by a client on the first computer and a server on the second computer ([0100] - discovery), one or more shared RDMA-capable providers ([0068] and Fig. 35 - client/server RDMA transfer); and posting, by the client, an

I/O processing request for completion by the server on the second computer ([0072] - I/O processing).

Regarding claim 8, Pandya teaches the method of claim 7 wherein the discovering one or more shared RDMA-capable providers further comprises: obtaining, by the client, a server request resume key from the server ([0120]); opening, by the client, a pipe to the server ([0124] - pipes); sending, by the client over the pipe, a negotiate request ([0105]); and sending, by the server over the pipe, a negotiate response including a minimal list of common providers ([0105]).

Regarding claim 9, Pandya teaches the method of claim 7, further comprising: creating, by the client, an RDMA connection to the server over a shared RDMA-capable provider ([0105]); and authenticating, by the client and the server, the RDMA connection ([0115]).

Regarding claim 10, Pandya teaches the method of claim 9, further comprising: registering, by the client, one or more files for use with the server over the RDMA connection ([0098]).

Regarding claim 11, Pandya teaches the method of claim 10 wherein the registering one or more files comprises: sending, by the client to the server, a register file message ([0098]); and sending, by the server to the client, a register file completion message ([0098]).

Regarding claim 12, Pandya teaches the method of claim 9 wherein the authenticating the RDMA connection further comprises: sending, by the client, an authenticate request message to the server, the authenticate request message including a key ([0127]); if the key matches a previous key sent by the server to

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the client, sending, by the server, an authenticate response message to the client ([0127]).

Regarding claim 13, Pandya teaches the method of claim 12 wherein the previous key is a key contained in a negotiate response message sent by the server to the client ([0127]).

Regarding claim 14, Pandya teaches the method of claim 12, further comprising: sending, by the server to the client, a status response message to complete the authenticating ([0127]).

Regarding claim 15, Pandya teaches the method of claim 7 wherein the posting the I/O processing request comprises sending, by the client, one of (a) a close request, (b) a cancel request, (c) a read request, (d) a 5 write request, (e) a vectored read request, and (f) a vectored write request ([0140]).

Regarding claim 16, Pandya teaches the method of claim 15, further comprising: completing, by the server, the read request and the vectored read request by sending data using RDMA write operations ([0165]); and completing, by the server, the write request and the vectored write request by sending data using normal send operations ([0165]).

Regarding claim 18, Pandya teaches the method of claim 7 wherein posting the I/O processing request further includes indicating whether the completion by the server should be in polling mode ([0115]).

Regarding claim 20, Pandya teaches the method of claim 18, further comprising: if the client indicates that the completion should not be in polling

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mode, completing, by the server, the I/O processing request by sending a status block to the first computer by way of RDMA transfer ([0100]).

Regarding claim 21, Pandya teaches the method of claim 18, further comprising: if the client indicates that the completion should be in polling mode, and the client has sent an interrupt request message to the server, sending, by the server to the client, an interrupt response message by way of an ordinary send ([0112]).

Regarding claim 22, Pandya teaches the method of claim 7 wherein posting the I/O processing request further includes specifying a number of credits in a header of the request ([0124]).

Regarding claim 23, Pandya teaches computer-readable media storing computer-executable instructions for implementing a method for offloading an input/output (I/O) task from a first computer to a second computer, the method comprising: discovering, by a client on the first computer and a server on the second computer ([0100] - discovery), one or more shared RDMA-capable providers; and posting, by the client, an I/O processing request for completion by the server on the second computer ([0112] - storage offload).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the

invention was made.

4. Claims 4, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pandya in view of the U. S. Patent Application Publication No. 20040117438 by Considine et al., hereinafter Considine.

Regarding claim 4, Pandya teaches the system of claim 3.

Pandya does not explicitly teach such system wherein the second protocol is SMB.

Regarding claim 17, Pandya teaches the method of claim 15.

Pandya does not explicitly teach such system wherein the vectored write request includes a collapse flag in a header of the request.

However, Considine, in analogous art, directed to digital information processing, and particularly to methods, systems and protocols for managing storage in digital networks, teaches a system, where a second protocol is SMB ([0085]), and wherein the data flow is denoted via implementation of various flags ([0528]).

Therefore, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate these teachings of Considine into the teachings of Pandya in order to enhance the flexibility and compatibility of the system. Pandya, with incorporated teachings of Considine, is hereinafter referred to as modified Pandya.

Modified Pandya teaches the missing limitations of claims 4 and 17, recited above.

Regarding claim 19, Pandya teaches the method of claim 18 wherein the

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indicating whether the completion should be in polling mode comprises indicating that the completion should not be in polling mode by setting an interrupt flag in a header of the I/O processing request (Considine, [0528]).

5. **Examiner's note:** Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objection made. Applicant must show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vitali Korobov whose telephone number is 571-272-7506. The examiner can normally be reached on Mon-Friday 8a.m. - 4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571)272-4006. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

01/21/2008
VAK

Vitali Korobov
Examiner
Art Unit 2155


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SUPERVISORY PATENT EXAMINER